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## THE EFFECT OF INTEREST RATE POLICY ON GDP DYNAMICS IN LATVIA

### ВПЛИВ ВІДСОТКОВОЇ ПОЛІТИКИ НА ДИНАМІКУ ВВП ЛАТВІЇ

*The aim of the paper is to study the impact of interest rate policy on gross domestic product dynamics in Latvia. Since the mid-90s economic activity in Latvia has been on a constant rise, its economy has shown one of the highest economic growth rates in the European Union - its gross domestic product has gone up approximately twice as fast as the average figure in the European Union. Monetary factors were among the main drivers of economic growth in Latvia. Latvia is one of the post-socialist countries that have succeeded in using expansionary monetary policy to boost economic growth. To drive economic development the Bank of Latvia used short-term credits to commercial banks for liquidity maintenance, implemented credit auctions and Lombard loans. It also supported the money volume in the set parameters and adjusted the level of liquidity of commercial banks by changing the minimal reserve requirements. Credit expansion was conducted by monetary authorities under appropriate macroeconomic conditions - central bank of Latvia paid attention to control monetary supply, velocity of money, inflation, exchange rate and other macroeconomic indicators.*

*This study contributes to the statement concerning the role of interest rate policy in gross domestic product growth in Latvia. In the study correlation analysis has been exploited to analyze the association between real interest rate and gross domestic product dynamics in Latvia. The research results reveal that in 1996-2013 real interest rate was associated with gross domestic product growth in Latvia negatively, and the relationship was rather strong. Granger causality test has indicated that real interest rate caused gross domestic product growth in the short-term period, but in the long-term period (two and more years) gross domestic product growth caused real interest rate.*

**Keywords:** interest rate policy, economic growth, gross domestic product, correlation, causality, Latvia.

*Метою статті є аналіз впливу відсоткової політики на динаміку валового внутрішнього продукту у Латвії. Починаючи з середини 90-х років економічна активність у Латвії постійно зростала, її економіка демонструвала одні з найвищих показників зростання в Європейському Союзі – зростання її валового внутрішнього продукту приблизно вдвічі перевищило середній показник по Європейському Союзу. Монетарні фактори були серед основних драйверів економічного зростання у Латвії. Латвія є однією з постсоціалістичних країн, які досягли успіху у використанні політики монетарної експансії для стимулювання економічного зростання. З цією метою Банк Латвії використовував короткострокові кредити для підтримки ліквідності комерційних банків, впровадив кредитні аукціони та ломбардні кредити. Він підтримував обсяг грошової маси у визначених параметрах та регулював рівень ліквідності комерційних банків шляхом зміни мінімальних резервних вимог. Кредитна експансія реалізувалася монетарною владою за належних макроекономічних умов – центральний банк Латвії приділяв увагу контролю пропозиції грошей, швидкості грошей, інфляції, валютного курсу та іншим макроекономічним індикаторам.*

*Це дослідження підтверджує роль відсоткової політики у зростанні валового внутрішнього продукту Латвії. У роботі для аналізу ступеню зв'язку між реальною відсотковою ставкою та динамікою валового внутрішнього продукту в Латвії було використано кореляційний аналіз. Результати дослідження виявили, що у 1996-2013 зв'язок реальної відсоткової ставки зі зростанням валового внутрішнього продукту був негативним і досить значним. Тест Гренджера на причинність визначив, що реальна відсоткова ставка впливає на приріст валового внутрішнього продукту у короткостроковому періоді, а у довгостроковому (два і більше років) відсоткова ставка визначає зростання валового внутрішнього продукту.*

**Ключові слова:** відсоткова політика, економічне зростання, валовий внутрішній продукт, кореляція, причинність, Латвія.

**Introduction.** Interest rate is one of the basic monetary instruments in developed countries. One of the key goals of the state interest rate policy is to contribute economic growth by providing low loan interest rates for enterprises and private persons. Interest rate is one of the macroeconomic growth factors. Nowadays both politic and monetary authorities of Ukraine are looking for an efficient strategy to contribute to economic growth in our country. That is why successful experience of some post-socialist economies could be used by the National Bank of Ukraine to develop sound measures to boost business activity in our state.

The effect of interest rate on GDP dynamics is the subject of many studies from all over the world performed by R. Barro, A. Greenspan, M.Friedman, J. Keynes, J. Stiglitz and many others. Some of them focus their studies on drivers of economic growth in transition countries (A. Chubrik, M. Próchhiak, P. Hlavacek, B. Bal-Domanska) and especially in Baltics (G. Yucel, G.Hunya). Although very few studies are dedicated to specific features of interest rate policy in Baltic states. Latvia is one of the countries that have succeeded in using expansionary monetary policy to boost economic growth. This experience could be a valuable lesson for other post-soviet countries Ukraine included.

**Setting objectives.** Study is performed to analyze the effect of interest rate on GDP growth in Latvia, to indicate the factors that have driven Latvian economic boom in 90-s and 2000-s.

**Methodology.** In the study the Pearson's correlation test was used to analyze the relationship between interest rates and GDP growth in Latvia. Granger causality test was used to study the causation in these associations. Calculations were performed by means of Microsoft Excel and Eviews. Data was collected from World Data Atlas "Knoema", OECD National Accounts and the Bank of Latvia's data files for the period 1996- 2013.

**Research results.** The paper is focused on the case of economic development in Latvia. Since the mid-90s, economic activity in Latvia has been on a constant rise and GDP has gone up approximately twice as fast as the average figure in the EU. Latvia has shown one of the highest economic growth rates in the EU. In the period from 2001 to 2004 the average gross domestic product growth in Latvia was 7.6% a year [1].

4 May 1990 Latvia adopting the Declaration On the Restoration of Independence of the Republic of Latvia began the transformation from a centrally planned economy to a market economy. The period between 1990 and 1993 was marked by inflation surging to the level of hyperinflation and the economic downturn reducing the economic activity by almost one third in 1992. In 1994–1999, macroeconomic stabilisation of the economy took place, thereby triggering a return to economic growth, with the reforms initiated and launched at that time laying the foundation for the economy for many years to come. [2]. Monetary factors were among the main drivers of economic growth in Latvia. In 1998 the changes of Latvia's mortgage legislation caused so-called "mortgage fever". Mortgage rates offered by big banks have amounted to 8% and have been followed by construction boom and fast GDP growth. [3]. After substantial decline of the official refinancing rate the banking sector's investment opportunities changed substantially, and so did its policy. Lending to enterprises and private persons grew rapidly, because in the first half 1998, credit risk decreased, interest rates fell, funds raised by banks increased and the maturity of deposits became longer. In 1998 loans issued to domestic enterprises and private persons grew by 194.8 million lats or 52.0%. Lending increased in the most sectors of the national economy of Latvia, except mining and quarrying, and electricity, gas and water supply. The largest growth was recorded for loans to financial intermediation (1.9 times), agriculture, hunting and forestry (1.9 times), construction (1.8 times), as well as transport, storage and communication (1.6 times). Of total loans to the national economy, 66.3% went to manufacturing, trade, and transport, storage and communication [4]. In the period between 2000 and 2004, loans to residents increased from around 20% of GDP to 50% of GDP [2]. Great role in the rise in lending belonged to foreign capital, especially Swedish banks.

Credit expansion was conducted by monetary authorities under appropriate macroeconomic conditions. Central bank of Latvia paid attention to control monetary

supply, velocity of money, inflation, exchange rate and other macroeconomic indicators.

Latvia quickly and effectively coped with hyperinflation that had started at the beginning of the 90s. In 2000-2003 the average consumer price inflation in Latvia has been within the limits of 2-3%. In 2004 inflation was higher than the price growth observed in previous years. Higher inflation growth in 2004 was due to a combination of several one-time factors, mainly the rise of administratively regulated prices, harmonisation of indirect tax rates, inflation expectations related to Latvia's accession to the EU, high oil prices. [1] Inflation index peaked in 2007 reaching 20% and due to contractionary monetary policy declined for the next two years to -10% (see fig. 1).

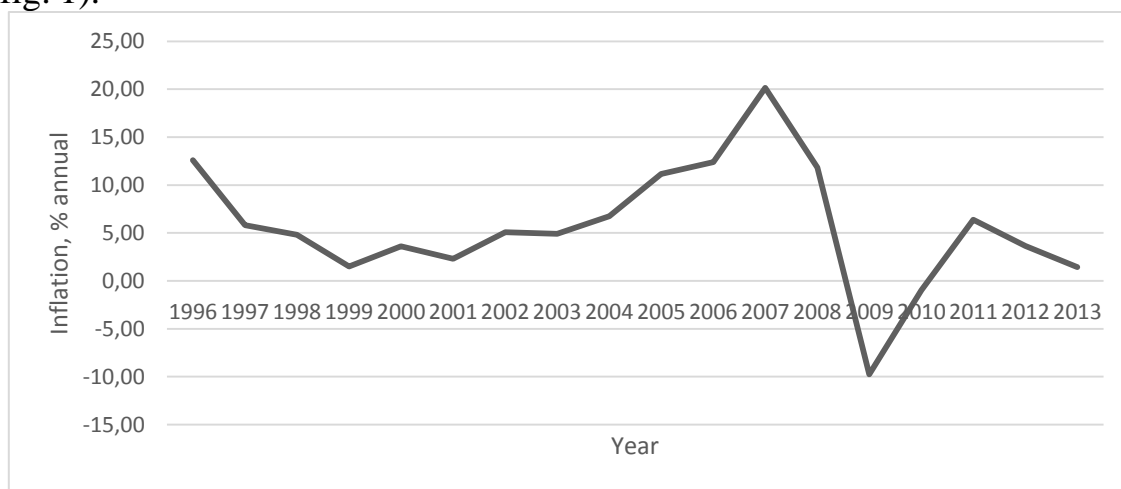


Figure 1 - Inflation, GDP deflator (annual %) in Latvia

Source: [6]

Exchange rate of the national currency – Lat – was kept rather stable in spite of the consequences of the Russian crisis in 1999 and the mortgage crisis in US stated in 2007. The Bank of Latvia has been implementing the lats pegging policy since February 1994 when the lats was pegged to the SDR currency basket. As of January 1, 2005 the lats has been pegged to the euro [5]. In 1996-2013 the official exchange rate of lat was rather stable reaching its minimum in 2008 equaled to 0.480816667 lat per US\$ and maximum in 2001 - 0.6279 lat per US\$. [6].

It is worth mentioning that Latvia's GDP growth was also driven by its foreign trade. Within 1999-2008 its volume has considerably increased – export almost in 3,8 times, but import in 4,1 times. The volume of foreign trade has been increasing year from a year, except 1999 when the consequences of the Russian crisis have occurred [5]. Latvia changed foreign trade directions from Russia to Euro zone dramatically. The fraction of European countries in Latvia's export in 2000-2002 amounted to more than 64%. Latvian companies began to diversify their product ranges switching to high added value products. Development of new branches and new markets, especially in Euro zone, Great Britain, USA and Eastern countries, influenced Latvia's economic growth [3].

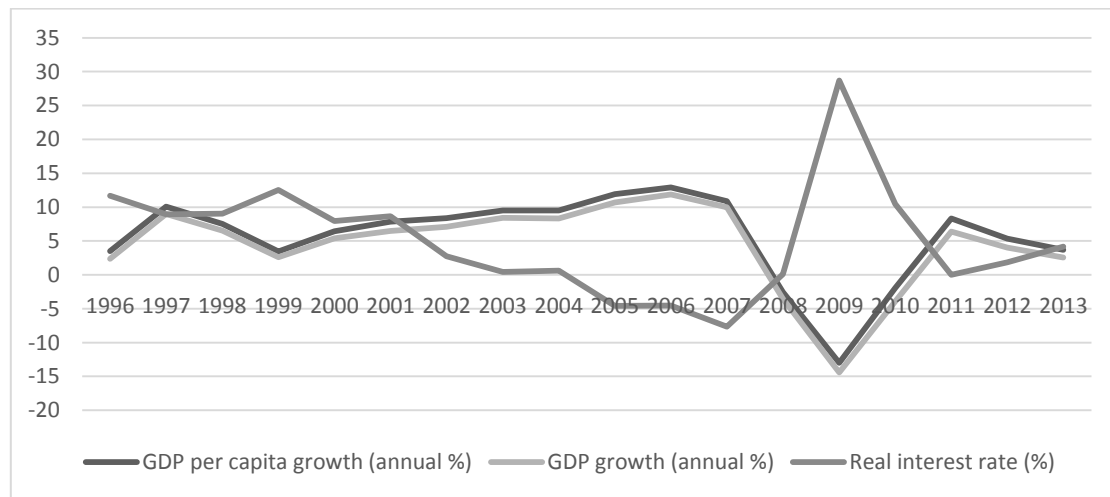


Figure 2 - GDP growth and real interest rate in Latvia

Source: [7]

This study contributes to the statement concerning the role of interest rate policy in GDP growth in Latvia. Correlation analysis revealed substantial relationship between GDP growth and real interest rate (-0.76165) (see table 1) and the association of GDP growth and interest rate was negative, i.e. interest rate decline was accompanied by GDP growth and vice versa (see figure 2). The figure 2 shows that in 1996-2013 real interest rate and gross domestic product changed the opposite ways. Analysis shows that there was no strong association of GDP amount per capita and the rate analyzed, that could be explained by stable exchange rate of Latvia's national currency.

Table 1 - Correlation between GDP growth and real interest rate in Latvia

	GDP, US Dollar, Millions, 2010, per capita	GDP per capita growth (annual %)	GDP growth (annual %)	Real interest rate (%)
<b>GDP, US Dollar, Millions, 2010</b>	1			
<b>GDP per capita growth (annual %)</b>	-0.26121	1		
<b>GDP growth (annual %)</b>	-0.266	0.998861	1	
<b>Real interest rate (%)</b>	-0.33782	-0.76165	-0.75947	1

Source: calculations performed by the author on the basis of [6], [7].

Granger causality test for the period 1996-2013 revealed that real interest rate (RIR) causes GDP growth in case of using 1-year lag, but 2 and more lags give the opposite result (see Table 2). Gradual decline in the real interest rate caused GDP rise in the short term, but in the long period (2 and more years) GRP growth influenced interest rate, that doesn't contradict macroeconomic theory. Therefore



interest rate policy can be effective driver of economic development of the state being combined with other monetary and fiscal measures.

The Bank of Latvia has started using of refinancing as monetary policy instrument in 1993 only by granting the short-term credits to commercial banks for liquidity maintenance. Since November 1993, when the demand for credits exceeded the supply of credit resources, the Bank of Latvia has started carrying out of the credit auctions. In September 1995 it has started granting the Lombard loans (it's the form of refinancing when the Central bank grants the credit under pledge). Also central bank of Latvia supports the money volume in the set parameters and adjusts the level of liquidity of commercial banks by changing the minimal reserve requirements [5].

Table 2 - Pairwise Granger Causality Tests

Number of lags	Number of observations	Null Hypothesis	F-statistic	Probability
1	17	RIR does not Granger cause GDP	7.54155	0.0158
		GDP does not Granger cause RIR	3.58918	0.0790
2	16	RIR does not Granger cause GDP	2.20684	0.1564
		GDP does not Granger cause RIR	4.29527	0.0418
3	15	RIR does not Granger cause GDP	2.74795	0.1125
		GDP does not Granger cause RIR	14.3071	0.0014
4	14	RIR does not Granger cause GDP	1.59271	0.3078
		GDP does not Granger cause RIR	22.8736	0.0021

Source: calculations were performed by the author on the basis of [6], [7].

**Conclusions.** Since the mid-90s, economic activity in Latvia has been on a constant rise and its economy has shown one of the highest economic growth rates in the EU. Latvia is one of the post-socialist countries that have succeeded in using expansionary monetary policy to boost economic growth. The novelty of the paper lies in the following. Latvia's economic growth was driven by two basic factors - credit expansion and European foreign trade direction. Those emerged from declining refinancing rate, rather low inflation and stable exchange rate. The study revealed that in 1996-2013 real interest rate was associated with GDP growth in Latvia negatively, and the relationship was rather strong. Granger causality test has shown that real interest rate caused GDP growth in the short period, but in the long period (2 and more years) GDP growth causes interest rate. Latvia's experience could be a valuable lesson for other post-soviet countries Ukraine included. The following studies will be focused on the interest rate policy in other post-soviet states.

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## EXTERNAL ECONOMIC POTENTIAL OF UKRAINE IN THE BLACK SEA REGION

### ВНЕШНЕЭКОНОМИЧЕСКИЙ ПОТЕНЦИАЛ УКРАИНЫ В ЧЕРНОМОРСКОМ РЕГИОНЕ

*The article deals with the historical background for the creation of the Silk Road. Based on the research conducted the article defines the routes of cargo transportation of the ancient and modern Silk Road and analyzes the background for creation of the "New Economic Belt - The Great Silk Road". This article briefly describes the perspectives of the Silk Road Development Initiative to facilitate the trade and investments to Central Asia and other countries of "The Great Silk Road". The author states that the successful implementation of the project of building the "New Silk Road" will, in some way, even mark the beginning of the new era, the era of active expansion of Asia into young and exuberant Europe. One of the main goals of the "One Belt - One Road" initiative is the development of China's central and western regions. The Chinese initiative is more inwardly-directed than outwardly-directed towards the Chinese economy and Chinese society.*

*The paper has analysed the background of development of the geo-economical code of Ukraine and has studied the modern trade relationship between Ukraine and China. The author has researched the possibilities of using the potential of Ukraine to implement the conceptual provisions of the project "One Belt, One Road" and has paid much attention to the main goals of this project. Author states that as the potential for economic cooperation between states is closely*